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ABSTRACT

Because information flow is considered essential to an organization and because decision makers are dependent upon accurate information, the distortion of messages as they move upward in an organization has become a central concern of many organizational communication researchers. The purposes of this paper are to critically review the various approaches to operationalizing such "upward distortion," to emphasize those which are most misleading, and to suggest operational procedures which will provide more valid indices of upward distortion. The following four categories of operational definitions purporting to measure upward distortion are reviewed: disparity scores, questionnaire/interview data, actual encoding of messages, and selection/transmission of messages. (JM)

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REDUCING THE DISTORTION IN UPWARD DISTORTION DATA

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ABSTRACT

This paper posits that many of the conclusions concerning upward distortion in organizational hierarchies are based upon operational procedures which are equivocal and often lead to confounding interpretations. This thesis was supported by reviewing four categories of operational definitions purporting to measure "upward distortion." The four categories were: disparity scores, questionnaire/interview data, actual encoding of messages, and selection/transmission of messages. Following this critical review procedures are suggested designed to reduce the distortion in upward distortion data.

A theme common to many organizational theorists and researchers is that information flow is the "lifeblood" of an organization. In order for decision makers to arrive at the best possible decision selected from a set of alternative decisions, accurate information is a necessity. Given this theme and its underlying rationale, we can easily understand why upward distortion of organizational messages has become a central concern of many organizational communication researchers.

The centrality of upward distortion as an issue in organizational communication necessitates that we critically assess the procedures used to investigate this concept. This assertion is based upon the rationale that "upward distortion" has generated many different operational definitions all purporting to measure the same thing. Furthermore, it appears that many of the findings related to upward distortion are based upon operational definitions which are both equivocal and misleading. Hence, the purpose of this paper is twofold: (1) To critically review the various approaches to operationalizing "upward distortion" highlighting those which are most misleading; and (2) To suggest operational procedures which will provide us with more valid indices of upward distortion.

Upward Distortion: A Critical Review Of Operational Definitions

The operational definitions reviewed in this section will be subsumed under four general headings: disparity scores, questionnaire/

interview data, selection/transmission of messages and actual encoding of messages. Representative studies will be presented under each heading along with a critical assessment of the specific operational definition used in the studies.

Disparity Scores

Representative studies using disparity scores as an index of upward distortion include those conducted by Read,[1] Mellinger,[2] Maier, Hoffman and Read,[3] and Athanassiades.[4] The logic upon which the disparity score is based is as follows. If the subordinate sent accurate messages to his supervisor, then the supervisor should know certain things about the subordinate's organizational space.[5] Hence, the greater the disparity between a supervisor's and subordinate's evaluation (rating, ranking) of elements in the subordinate's space, the less accurate the upward communication. Phrased differently, accuracy of upward communication results in accurate information at the supervisory level which in turn results in congruence between a supervisor's and subordinate's evaluations. This logic served as the basis for the specific operational procedures adopted by Read, Mellinger, and Maier, Hoffman, and Read. Athanassiades' studies, although also utilizing a disparity score, was based upon a different rationale and henced utilized a different methodology.

Athanassiades argued that distortion of upward communication is "the difference between the index of upward communication as it occurs and the index of upward communication as it would occur if if the subordinate were not distorting."[6] In terms of specific

procedures, Athanassiades asked subordinates to complete Gordon's Personal Profile[7] and Inventory Scales[8] as measures of self description and were informed that the results would be kept confidential. He then asked subordinates to rate themselves again on the same scales, which according to instructions, would be "counter-evaluated by their respective superiors."[9] Thus, Athanassiades reasoned that the former scores represented accurate communication, the latter scores represented distorted communication, and the disparity between the two scores represented the degree of upward distortion.

On the face of it, there does appear to be an intuitive appeal to the disparity approach to operationalizing "upward distortion." After all, if a subordinate did send accurate messages to his supervisor, then the supervisor should know more about the elements in the subordinate's organizational space than if less accurate messages were sent. Thus, the degree of agreement within a given supervisor-subordinate dyad with respect to the evaluation of elements in that space should serve as an index of upward distortion. Unfortunately, the appeal of this operational definition is greatly diminished as one begins to critically examine both the potentially confounding interpretations generated by the procedure and the apparent lack of isomorphism between the operational definition and its allied theoretical construct. The following discussion presents this critical examination with the specific reference to the Read, Mellinger, and Maier, Hoffman, and Read studies. Since Athanassiades' studies represent a deviation from the approach of the above three studies, his will be analyzed separately.

In essence, Read, Mellinger, and Maier, Hoffman, and Read would have us believe that because disparity exists in the respective evaluations of a supervisor and subordinate, then the latter has received distorted information from the former. A more direct and parsimonious interpretation, however, is that disparity exists in the dyadic evaluations simply because hierarchical differences lead to disparity in perceptions. In other words, these three studies collected data based primarily upon perceptual processes. Supervisors were asked to evaluate various elements on the basis of what these elements would "mean" to the subordinate. Hence, rather than conclude that disparity in evaluations is a result of distorted upward communication, we can just as easily, and possibly more justifiably conclude that the disparity in evaluations is a result of differential perceptions associated with different levels of the hierarchy. This latter interpretation gains further credence by simply considering the extensive body of literature supporting the proposition that one's position in an organization shapes one's perceptions of the organization.[10]

Secondly, the disparity score may be interpreted in terms of encoded distortion, or it may be interpreted in terms of decoded distortion. That is, the disparity score may also lead to the conflicting interpretation that the supervisor has distorted the information after receiving it from the subordinate. Unfortunately the approach presented by Read, Mellinger, and Maier, Hoffman, and Read fail to control for this plausible confounding interpretation and hence, leads to conclusions based on a questionable operational definition.

Another criticism, and one which possibly casts the greatest degree of doubt on the validity of the disparity score, is that this operational definition of "upward distortion" fails to measure message sending behaviors. That is, conclusions about upward distortion are put forth, yet these conclusions are in no way based directly upon message sending behaviors of subordinates. At a minimum, one would hope that an operational definition of "upward distortion" would capture the essence of this construct--i.e., actual encoding behaviors of subordinates. Unfortunately the disparity score fails to capture this essence. It is an operational definition which leads to conclusions about a concept while distorting the crucial distinctions of that concept. Apparently, Read, Mellinger, and Maier, Hoffman, and Read feel that upward distortion may be operationalized in a post-hoc fashion without ever measuring message sending behaviors per se. If we accept the notion that a "good" operational definition should accurately map its referential territory, then an operational definition of "upward distortion" which fails to measure message sending behaviors is a misleading map.

To Athanassiades' credit an operational definition was conceived which at least dealt solely with subordinates' behavior and which was not reliant upon supervisors' perceptions. However, his operational definition may be critiqued on three grounds. First, the substantive material of the supposed distortion dealt with a personality description and not the "nuts and bolts" of most organizational messages--i.e., task related data. Hence, to accept Athanassiades' findings we must also accept the assumption that because subordinates will distort personal psychological profiles

seen by superiors, they will also distort task related information. At best, this is a tenuous assumption.

Second, Athanassiades, like Read, Mellinger, and Maier, Hoffman, and Read, is not analyzing subordinates' message sending behaviors. Rather, he is looking at the disparity of two sets of personality test scores--one anonymous and one open to the view of the supervisor. Athanassiades would have us believe that showing a supervisor a subordinate's score on a personality test is the same as having a subordinate send a message to the supervisor. Thus, while Athanassiades does eliminate the problems of supervisors' perception so inherent in the previously discussed studies, he does not eliminate the failure to measure message sending behavior.

Third, Athanassiades' procedures are based on the assumption that when subordinates filled out the personality inventory anonymously their responses were accurate and undistorted; when the inventory was filled out for the supervisor's inspection the responses were distorted. Thus, in order for this disparity score to have <u>any</u> validity we must accept the assumption that the anonymous scores are themselves accurate and valid indices of the subordinate's value system. Athanassiades glosses over this issue by stating: "Gordon's questionnaires were used because they are relatively short, self-administered, and are reported to have acceptable degrees of validity and reliability; and because they are of the forced choice type which reduces fakeability of responses, and so provides some additional assurance that the scores reveal relatively undistorted communication."[11] However, in their discussion of Gordon's instru-

ment, Robinson and Shaver observe that "The items are transparent and may invite faking."[12] Furthermore, they stress that the "Caveat of the author concerning validation must be kept in mind."[13] In short, Athanassiades' studies raise serious questions about the "relatively undistorted communication" in the anonymous condition.

In summary, the disparity technique represented by Read, Mellinger, Maier, Hoffman, and Read, and Athanassiades invite alternative interpretations of both the conclusions and the referential nature of the underlying construct.

Questionnaire/Interview Responses

This approach to operationalizing "upward distortion" is based upon the simple notion that a researcher interested in examining a given construct should ask subjects a series of questions related to that construct. Thus, a number of researchers interested in examining accuracy of upward communication have collected data on the basis of responses to questionnaires and/or interviews. Representative studies using the questionnaire/interview approach include Zima,[14] Minter,[15] Burke and Wilcox,[16] and Willits.[17]

The major criticism of any questionnaire/interview approach to operationalizing "upward distortion" may be succinctly stated as follows: Data are collected relative to what a subject says he does or believes, and not necessarily what he actually does or believes. Furthermore, since studies using the questionnaire/interview approach rarely collect behavioral data to validate self-report data we are forced to infer the former on the basis of the latter.

For example, consider the following question taken from Likert's Organizational Climate questionnaire. This question deals with the variable "Accuracy of Upward Communication Via Line" and consists of an interval scale with four descriptors. The descriptors are as follows: 1) "Tends to be inaccurate," 2) "Information that boss wants to hear flows; other information is restricted and filtered," 3) "Information that boss wants to hear flows; other information may be limited or cautiously given," and 4) "Accurate."[18] Obviously, conclusions concerning responses to this item can only be couched in terms of what subordinates say about accuracy of upward communication. Any conclusion about upward distortion per se, on the basis of responses to this question is at best an inference.

In short, questionnaire/interview data do not measure message sending behaviors but rather meta message sending behaviors. That is, they measure messages about message sending behaviors.

Selection and/or Transmission of Messages

In reviewing the relevant literature only one study was found which operationalized "upward distortion" in terms of requiring a subject to select a message and transmit it to a supervisor. The study, conducted by O'Reilly and Roberts, was designed to investigate "selective filtration or omission as a mechanism of distortion."[19]

In order to investigate this "mechanism" O'Reilly and Roberts designed a laboratory experiment manipulating direction of information flow (upward, downward, lateral), and quality of interpersonal relationship (hi trust, low trust). The design required subjects

to role play a given organizational member, select messages from a set of prepared messages, and then send the message(s) to either a peer, superior, or subordinate. The dependent measure consisted of a frequency count of the number of messages transmitted which were pre-validated as important, unimportant, favorable to the subordinate, or unfavorable to the subordinate.

A critical analysis of this approach to operationalizing "upward distortion" results in the conclusion that the ingenuity and creativity manifested by O'Reilly and Roberts have provided measures of precisely that which is measured--i.e. message selection and transmission. Unfortunately, since most subordinates <u>create</u> messages rather than <u>select</u> messages from a set of well defined messages, one is left with the unsettling feeling that this study operationalizes "mechanisms of selective filtration or omission" without measuring encoding behaviors per se. Obviously one could argue that the selection of a prepared message may be viewed as one element of encoding behavior in that the procedure provides the subject with considerable latitude in deciding which message will be sent and which will not be sent. But again, the messages have not been created by the subject himself. Rather, they have been created to fulfill various experimental conditions and designed to be representative of message types.

It should be noted, however, that some organizational positions do require the selection and transmission of messages and hence the O'Reilly and Roberts study is highly appropriate in generalizing to these positions. For example, traffic controllers and inventory controllers

function primarily as information regulators. They select the data which will be sent, decide how it will be sent, when it will be sent, and how much of it will be sent. In short, the O'Reilly and Roberts study is extremely valuable if we focus primarily upon information processors who select rather than create messages.

Actual Encoding of Messages

Only three studies which operationalized this construct in terms of actual encoding behaviors in organizational heirarchies were found in reviewing the literature.[20] Two of the studies were conducted by Kelley[21] and Cohen[22] with the former serving as a model for the latter.

Both of these studies were conducted in laboratory settings and both utilized similar procedures. In Kelley's study subjects were assigned to mobility conditions (upward, downward) and status conditions (hi, low) on the basis of instructions provided by the experimenter. In Cohen's study data were collected soley from subjects in the low (subordinate) status condition which was also induced by means of experimenter instructions. In both studies subjects were told that all communication with other groups in the hierarchy was to be done via written messages which would be relayed by the experimenter. A content analysis of these written messages provided the data for both studies.

The obvious strength of the operational procedures presented above is that upward distortion is measured on the basis of actual task related messages created by subordinates and sent to supervisors.

Thus, when Kelley and Cohen conclude that upwardly mobile subordinates tend to send messages to their supervisors which reflect favorably upon the subordinate, we are assured that this conclusion is based upon an analysis of actual messages sent by subordinates.

Unfortunately, the data provided by Kelley and Cohen have been collected in the laboratory and not hierarchies of "real" organizations. Hence questions concerning ego involvement of subjects, internalization of mobility manipulations, and artificiality of experimental procedures may be raised leading to the superordinate question of external validity. Given these questions, the conclusions provided by Kelley and Cohen are still considered "classical" and included in most surveys of organizational communication.

The third study utilizing actual encoding of messages was conducted by Krivonos.[13] The data for his study were collected from participants (subordinates) at the corporate headquarters of two large manufacturing companies. The subordinates were asked to write messages to their supervisors based on simulated situations prepared for the study. The simulated situations were of a task or non-task nature and were either favorable or unfavorable to the subordinate. Thus, each subordinate wrote four messages (counterbalanced to control for order effects) based on each of the four stimulus situations: (1) task related/favorable; (2) task related/unfavorable; (3) non-task related/favorable; and (4) non-task related/unfavorable.

As with the studies by Kelley and Cohen, the strength of the procedures employed by Krivonos is that distortion is measured on the basis of actual messages created by subordinates. The advantage of the approach by Krivonos over that of Kelley and Cohen is that the study was conducted in the hierarchical structure of "real" organizations.

Even though Krivonos did take the innovative step of having actual encoding of messages in "real-life" hierarchies, his approach is still open to criticism. The major criticism of the Krivonos approach is that the messages were not actually sent to supervisors, but rather the subordinates were told to write the messages as if these messages would be sent to their supervisors. Thus, not only were the situations from which the messages written simulated, but also, in a sense, the messages themselves were simulated. Therefore, while there was actual encoding behavior in this study, the message-sending behavior may have only been simulated rather than actual. Even with these criticisms in mind, Krivonos' is the first attempt to look at the encoding of messages in "real" organizational settings.

In summarizing the four operational approaches discussed in this paper we note that: (1) the disparity approach yields the most equivocal and misleading interpretations; (2) questionnaire/interview approaches yield meta message-sending data; (3) the laboratory approaches (actual encoding of messages and selection/transmission of messages) provide data closely alligned with the referential nature of the construct, "upward distortion" but may

be critiqued on grounds of external validity; and (4) the encoding of messages in actual organizational settings may help to overcome this external validity problem, but this approach is composed of a single study, which itself can be critiqued on the grounds of dealing with simulated rather than actual message-sending behavior. Moreover, of the thirteen studies reviewed, only Krivonos' dealt with actual encoding behaviors in "real" organizations. Athanassiades did deal with information "sent" in "real" organizations, but his studies examined distortion of psychological test profiles, not task related data. Thus, what we know about upward distortion is totally dependent on how we know it. And as argued thus far, how we know it is open to considerable criticism.

Given the critical review thus far, the reader might ask: How then should we operationalize upward distortion? The following section provides an answer to this question and in so doing stresses one major principle: the data collected should measure the actual encoding behaviors of subordinates.

Suggestions on Operationalizing Upward Distortion

One method for operationalizing "upward distortion" is to provide the subordinate with a case (hypothetical or real) and then ask him to construct a message on the basis of that case which would actually be sent to his immediate supervisor. This method, which is very similar to the approach used by Krivonos, not only captures the essence of the underlying construct (i.e. actual encoding behaviors), but also provides an externally valid measure of accuracy.

If the case represents the actual event, then anything the subordinate says about the event may be compared to the event with the comparison serving as a measure of degree of distortion. This technique is similar to analyzing rumor transmission as discussed by Allport and Postman[24] but is applied specifically to organizational hierarchies as Krivonos did in his study. The difference between this approach and the one utilized by Krivonos is that this suggested method deals with actual rather than simulated message-sending behavior.

A related approach is to use a modification of Davis' ECCO analysis.[25] Although primarily used to operationalize the concept "organizational grapevine," ECCO analysis may be applied to analyzing the substantive changes in a message as it moves vertically in the hierarchy. Thus, subjects (supervisors and subordinates) would be instructed to record as accurately as possible the message as sent (by subordinate) or as received (by supervisor), and the conditions under which it was sent or received (e.g. time of day, oral vs. written, etc.). It should also be noted that this procedure would provide a method for operationalizing March and Simon's concept, "uncertainty absorption,"[26] a concept theoretically akin to upward distortion.

Finally, upward distortion may be measured in a post-hoc fashion by analyzing the actual documents which organizational members utilize in carrying out their respective task functions. That is, researchers might consider analyzing memos, directives, and the sundry other written messages which subordinates send to

their supervisors during the course of an average work day. In a sense this procedure is a field setting application of the experimental procedures designed by Kelley and Cohen.

For those skeptics who might argue that such an approach is impractical if not impossible, we would suggest that they read two reports. The first is Adams' participant observer analysis of Vietnam related intelligence.[27] The second is a report of an intervention program conducted by Harvey and Boettger.[28]

Adams' analysis of the upward distortion in Vietnam related intelligence is based primarily upon written documents sent from lower levels in the intelligence gathering structure to upper levels in the structure. His analysis of these documents dramatically illustrates the nature, scope, and function of upward distortion.

Harvey and Boettger also analyzed upward directed messages but conducted their analysis as outside intervention agents. Essentially, their approach consisted of collecting written memos which were actually sent and used by a sub unit of an organization. After deleting all personal references in the memos, Harvey and Boettger used the edited memos as stimuli for group discussions concerning the general topic "communication improvement."

Thus, actual written messages have been collected in field settings and since such memos constitute a significant portion of most subordinates' message sending options, they should continue to be collected and analyzed.

Conclusion

The utility and necessity of operational definitions are obvious to anyone conducting research. Just as obvious, however, is the realization that some operational definitions of a concept are "better" than other operational definitions of the same concept. The "better" operational definition is that which accurately maps its referential territory, highlighting the salient features, de-emphasizing the non salient features.

In reviewing four different approaches to operationalizing "upward distortion" this paper has compared the more accurate maps with the less accurate maps. In addition, procedures were suggested to improve the process whereby we map the "upward distortion" territory. Since upward distortion is a central issue of organizational communication it behooves us to utilize the best operational definitions as possible. To do otherwise is to distort the data of upward distortion.

NOTES

[1] W.H. Read, "Upward Communication in Industrial Hierarchies," Human Relations, 15, (1962), 3-15.

[2] G.D. Mellinger, "Interpersonal Trust as a Factor in Communication," Journal of Abnormal and Social Psychology, 52, (1956), 304-309.

[3] N.R.F. Maier, L.R. Hoffman, and W.H. Read, "Superior-Subordinate Communication: The Relative Effectiveness of Managers Who Held Their Subordinates' Positions," Personnel Psychology, 16, (1963, 1-11.

[4] J.C. Athanassiades, "The Distortion of Upward Communication in Hierarchical Organizations," Academy of Management Journal, 16, (1973), 207-226; J.C. Athanassiades, "An Investigation of Some Communication Patterns of Female Subordinates in Hierarchical Organizations," Human Relations, 27, (1974), 195-209.

[5] The term "organizational space" refers to those phenomenological inputs associated with a given organizational position. To our knowledge the term was first presented in D. Katz and R.L. Kahn, The Social Psychology of Organizations, (New York: Wiley, 1966).

[6] Athanassiades, "The Distortion of Upward Communication in Hierarchical Organizations," p. 214.

[7] L.V. Gordon, Personal Profile Manual, 1963, Rev., (New York: Harcourt Brace and World, 1963).

[8] L.V. Gordon, Personal Inventory Manual, (New York: Harcourt Brace and World, 1963).

[9] Athanassiades, "An Investigation of Some Communication Patterns of Female Subordinates in Hierarchical Organizations," p. 200.

[10] For example, see: A. Downs, Inside Bureaucracy, (Boston: Little, Brown and Company, 1967); S. Lieberman, "The Effects of Changes in Roles on the Attitudes of Role Occupants," Human Relations, 9, (1956), 385-402; W.C. Redding, "The Organizational Communicator," in W.C. Redding and G.A. Sanborn (eds.), Business and Industrial Communication: A Source Book, (New York: Harper and Row, 1964); H. Guetzkow, "Communication in Organizations," in J.G. March (ed.), Handbook of Organizations, (Chicago: Rand McNally, 1965).

[11] Athanassiades, "The Distortion of Upward Communication in Hierarchical Organizations," p. 214.

[12] J.P. Robinson and P.R. Shaver, Measures of Social Psychological Attitudes, Rev. Ed., (Ann Arbor, Michigan: Institute for Social Research, 1973), p. 515.

[25] K. Davis, "A Method of Studying Communication Patterns in Organizations," Personnel Psychology. 6, (1953), 301-312.

[26] J.G. March and H.A. Simon; Organizations, (New York: Wiley, 1958).

[27] S. Adams, "Vietnam Cover-Up: Playing War With Number," Harpers, May 1975 41-44; 62-73.

[28] J.B. Harvey and C.R. Boettger, "Improving Communication Within a Managerial Workgroup," Journal of Applied Behavioral Science, 7, (1971), 164-179.